The MAC Flyer

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For Greater Efficiency
in MAC Air Operations

The MAC Flyer

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Integrity, Tough Situations, and You . . 3
Practice Autorotation 8
Global Notes 10
The Jawbone of an Ass 11
Ramp Roulette 19
C. R. Terror 24
Ten Minutes to Live 26
Quick Stoppers 28

8

11

19

COVER: You and Integrity play an important part in mission accomplishment. See page 3.

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Squawk Box

Hello, authors! Now, with one last leisurely stretch, we bid farewell to summer. The kids are starting school, Dad is settling back into the old job, and Mom is thinking of enrolling in that needlepoint class in the adult education program. Next chapter of the same old drill? Nope — not if you resolve that the coming months will see your article on its way to our editorial shop.

Ah, you *do* want to write for TMF? Good — here are a couple of tips that will make the project go a little more smoothly.

* Identify the audience you want to communicate with.
* Make an outline — even on the back of a box lunch lid.
* Do your research, and make a handful of notes.
* Write like mad — no editing at all.
* Let it cool, then go back and edit severely — now rewrite — reedit — rewrite.
* Type the whole effort — double spaced! — and proofread it, making whatever ink corrections are necessary.
* Send a copy our way, and wait for the good news of publication. Incidentally, the same techniques will put you at the top of the heap in the 1972 safety writing contest — and you can count this as the first ad.

(Adapted from AIRSCOOP by the author)

Integrity, Tough Situations, and You

by Maj Dick Wing

INTEGRITY IS WHAT YOU DO when no one else is watching. It's always putting a nickel in the coffee fund. It's doing your aerobics the other 11 months of the year. It's declaring your bonuses and extra earnings when you file your income tax return. It is doing the job right the first time. And — frankly — it is admitting you haven't always done all the things we've just mentioned.

Everyone has some degree of integrity towards everything in which he is involved. You may recognize integrity by another name — it's also called honesty, uprightness, truthfulness, sincerity.

Telling what integrity means and describing what it looks like in action is one thing. Telling you how to get it or even why you need it is another. Let's try why it is essential first.

Somewhere, sometime, you're going to have to face a tough situation. It may be nothing more than the everyday demands of your job; it could be a vast and involved project. How well you handle things when the going gets rough can be your own personal integrity meter.

In your tough situation you'll probably have several choices about what to do to straighten things out or to get the job done. You could find someone else to handle the problem, hoping the buck will stop there. You could drag your heels, claiming you need more time while waiting for the situation to get better of its own accord. Or you could apply yourself just enough to put your name on the final results, then farm out the mess to an associate with a reputation for getting the job done. But the best choice, and the one you as a man of integrity will make, is to face the problem, do the thing that has to be done, finish it in time, and know the feeling of real job satisfaction.

Up to this point we've been talking in abstracts. Now, to give you a better feel for taking the right course of action when your own "tough situation" presents itself, and (hopefully) to get you to take another look at your integrity quotient, let's get specific. Let's see how five different types of people in MAC could demonstrate good practical responsibility and honor in their daily assignments.

Commander

First, are you one who bears the title "Commander"? The fact that you were picked for a command job means you have a high degree of integrity. But others are watching you closely in all that you do, which means you've got to continue to show an even higher degree of professionalism. You can't afford to be less than the best.

A major Air Force commander once said, "Commanders are directly charged with the responsibility for accomplishing their mission safely as well as effectively. In the final analysis, they are safety officers." But what happens when the commander is seen driving with his seat belt buckle clanging on the pavement, or when he speeds past parked aircraft while taking a short cut across the flightline? Accident prevention takes a setback, and his exhortations for the troops to perform safely sound a trifle hypocritical.

The examples we cited are fortunately rare, but they do underscore the impact of the commander's integrity. Here's a more common f'rinstance from our own experience as well as yours. A nearly impossible task is levied from above on a unit which is not really up to speed. The subordinate unit commander won't admit that the

requirement is impossible, for *his* is a "can-do" outfit. Any inference that they can't hack the program is seen as a reflection on his own capability. So, sick airplanes are flown by pressured crews, and likely an accident results. Or if his luck holds, he makes his short-term gains — but suffers some long-term losses. His NORS rate climbs, morale drops, tension builds, and people start asking for release from active duty. One such "go-getter" now can claim a score of people lost to the airlines, and his devotion to himself finally backfired when promotion time rolled around.

The commander with integrity not only gets better long-term results, he usually has the troops on his side when the inevitable short-term pushes come along. Whenever he makes a decision, he thinks of the men with the skinned knuckles working out in the cold. When he says, "Buckle your seat belt," he offers $50 to anyone catching him without his own fastened. And when he tells his men that a certain standard of performance is expected, they know that he will be giving half again as much himself.

Staff Officers

The commander we talked about is the kind who can effectively tell his staff officers that any of them who are not fired with enthusiasm will be fired with enthusiasm. If you are a staff man, you need not only the degree of enthusiasm he suggested but the integrity he displayed and demanded.

We recently read a message reporting a situation where there appeared to be a minimum of quality staff work. The title could have been "Lack of integrity in support of a special operation."

Several bases had been asked to provide some support equipment for a training operation, much as they might have been in case of an actual international emergency. Since the commanders themselves could not personally monitor the equipment shipped, the onus for the record must fall on the staff men. Here is the result of their "efforts":

* A generator and two forklifts were inoperative when delivered.
* A power cart arrived still pickled.
* An aircraft tow bar was incomplete.
* Aircraft workstands, when finally broken out of their shipping crates, were found to be lacking parts.
* Other equipment was delivered without some parts or with significant mechanical faults.

The message went on to point out that the problems were rectified by extra efforts and by substitutes in the field. In other words, there was enough time to do it right the second time though the reasonable advance notice didn't allow enough for the first-time success. In the rush and push of operational pressures, short cuts were taken and assumptions were made. Where was staff integrity? And what would be your reaction to that kind of support if you were depending on these same people in a combat situation?

Perhaps the best rule of thumb for staffers is still

this old one: Work is good enough when you will bet your career on it. *Idealistic*, yes; there are times when understaffing, mismanagement, or inability limit the best of us. But it's still a handy yardstick for seeing if what you turn out is the kind of work on which you want your name.

Aircrew Members

Mr. Aircrewman, what does integrity mean to you? Your job is to take an airplane loaded with ordnance or people or cargo, move it through "footless halls of space," and accomplish a specific mission. Does your integrity give you a margin of success in completing this assignment? A close look at a few instances where integrity was lacking might help you answer that question.

Broken metal, charred scraps, and silence were all that remained of a century-series transport when the investigation began. Why had this well-qualified crew driven into the side of a mountain many miles from their planned route of flight? As the parts were examined and the facts sorted out, no big cause factor could be readily identified.

Then, one side note began to take on central importance. The navigator, charged with defining and monitoring a safe path for his machine, had been facing rocky going in his home life. Was it because of his tension and strain that the aircraft's position was misplotted — in mountainous terrain? Unfortunately, he isn't here to be asked. But there is an excellent chance he would be *if* he had realized he wasn't an effective crewmember while worrying about things going wrong at home. He could have talked with his supervisor, who might have stood him down for a short time. Or his aircraft commander, whom he knew well, could have made arrangements for a substitute. And either the AC or the supervisor might have spotted the problem themselves and headed it off. But no one moved first, and it cost us a crew, an airplane, and an extensive investigation.

Maybe that example is a little too drastic, so consider this one which strikes closer to home. We happened to overhear a telephone conversation the other day which hinted at substandard integrity. The scene was at one of the more popular RON spots, where a couple of crews had spent several days. Midmorning on the third day, with the weather picture deteriorating rapidly at their home station, they were alerted. No problem, since they had planned on returning that morning anyway. But initially one of the crews could not be located, and when finally found the crew reportedly was in no condition to fly. The fact that no accident or incident report came from this is more a measure of good luck than crewmember integrity.

Another example: two flight examiners were administering check rides — to each other. The first one completed his ride with a 100 percent score. And, would you believe it, the second one racked up 100 percent also. This may well be in the realm of possibility, but we suggest that double perfection is a rare thing. What is more likely is that this was part of a system in which

marginal crewmen were not being identified but were released to be later entrusted with valuable people and equipment. Suppose you were riding in an airplane and suddenly had to depend on the knowledge and ability of one of these men to save your life. Wouldn't it be more comforting to put your future in the hands of someone who scored only 95 percent, admitted he didn't know it all, and had the integrity to keep learning? We think so.

What can you as crewmen do? Perhaps the word *professionalism* sums it up. Sure, party when the party flag is flying, but be ready when the horn blows. If you have a personal problem, ask for some time off and get assistance from the people in the best position to help. And don't be caught short because you rely on a buddy-buddy standardization system. Aviation can be terribly unforgiving of any incapacity, neglect, or lack of integrity.

This has been mostly a negative treatment, and the problem demands positive thinking and action. So, positively and bluntly stated, you've got to do the best flying job possible. That's just the kind of a job you said you'd do when you joined the service.

Support People

Our parallel to the old saw about an army moving on its stomach is that a unit moves on its knucklebusters and line troops. Safety records are built, demanding missions are performed, promotions are made, and units receive praise from highly-placed people — all because the men on the scene did the jobs they were given, to the best of their ability.

What words of guidance can we offer to the men who maintain the aircraft, who drive the vehicles, who pump the JP-4 and foam the runways, who guard the flightlines, and do all the little jobs necessary to the flying business? Summed up simply in today's language, "Hang tough." While inspectors and supervisors can and do check many things, no one can oversee all that you do. The only *real guarantee* then is for you, the man with the wrench, to do the job right the first time.

Here in the head shed we see a large number of messages telling of mishaps which could have been prevented if the man on the scene had had the integrity his job demanded. In one case, two men were trying to do a three-man job when they ran out of hands and something got broken. Another man, working without a checklist, omitted a part and caused an inflight emergency. An electrician, completing a minor repair project, did not pick up all the loose solder drops and one piece eventually caused a short which led to a serious inflight emergency. The list could go on: tools left in intakes and other strange places, mismatched parts, crimped wires, and lost SOAP bottles. But we're not promoting the bad; we're encouraging the good.

And what does come under the heading of good work from the line troops? Things which we've seen include a transient airman standing patiently in the rain with his fire bottle, while the flight crew waited and *waited* for clearance before starting engines. Another time, a minor gear indication problem was not dismissed with a quick

peek and a casual shrug, but the aircraft was towed into a hangar, jacked up, and the system checked until the out-of-adjustment unit was located and fixed.

The reliable man makes all four grounding connections before he starts refueling the aircraft. When driving across the ramp, the sincere specialist (who has a buckled seat belt) does not exceed the posted and proper speed limit. When a torque value is specified for a nut, the honest mechanic uses a calibrated torque wrench instead of a calibrated forearm. These people are keeping the faith; they are showing integrity at the working level.

Supervisors

Are you one of the old heads, one who has learned a job so well you are now shepherding several others in the same specialty? If so, you are right in the middle of the integrity program. You, at the supervisory level in the management chain, have the most direct contact with the men actually doing the work and consequently have the biggest impact on the overall level of integrity.

Your men see the commander only in the distance; they see *you* close at hand. They react *generally* to the actions of staff members; they react *specifically* to you. They work *with* aircrews; you are the man they work for. They will try to imitate *you – whether you like it or not.* Unless you have the highest degree of integrity possible, people above you and below you will be shortchanged.

There are some supervisors who just aren't with the program. We remember one, responsible for a flightline taxi service, who had no idea when his people had last received any driving safety guidance, who did not even know how many of his assigned government vehicles had seat belts installed, and who could not understand why he was continually making trips to his commander's office to explain accidents. Integrity-wise, he was busy *hoping* things would turn out better instead of *helping* them do just that.

On the other hand, there are supervisors (thankfully, many of them) who are in direct and effective touch with all their subordinates. Problems are solved, talent is used effectively, high standards are demonstrated. The man with domestic troubles finds an understanding ear. The expert in fixing a particular piece of equipment finds an audience of others who need to share his skill.

The good supervisor shares responsibility for any mistakes and gives public plaudits for a job well done. This type of supervisor, leading and fully utilizing his men, is the focal point of integrity. His success is synonymous with unit effectiveness and safe operation.

Summary

Integrity is a lot of things to a lot of people. It's keeping faith; it's doing precisely what you are expected to do. Integrity means setting the example which you wish others to follow, and doing the right thing in all your assignments — even (and especially) when no one is watching. Integrity is getting the job done right the first time. In the final analysis, it is nothing more — and nothing less — than undiluted professionalism.

Realistic training is essential, but it can be too realistic. For example . . .

Practice Autorotation

—Just a Simulated Emergency

by Maj Bob Gardner

IT WAS A HOT HUMID Friday afternoon when Capt Ronnie Rollon and his copilot, Lt Bill Better, pulled in the collective pitch and lifted their Huskie into the air. Sure had been a slow day — not even one emergency scramble. Now they were scheduled for a one-hour currency flight in the alert helicopter.

Bill and Ron had already flown a routine proficiency mission that morning and they weren't very excited about another exercise around the flag pole. Both pilots had completed their quarterly maneuvers and Sgt Putoff, the crew chief, only needed night hoist work. However, this was the last week of the quarter and there were still airframe flying time requirements to fulfill.

Having planned nothing better to do, Ron started practicing basic transition maneuvers. He made several normal takeoffs and landings and a couple maximum performance takeoffs. That only took 30 minutes — the flight was sure getting boring and uncomfortable.

As Ron turned the trusty HH-43 downwind, Bill made an effort to break the monotony. Keying his mike, he challenged the AC, "Bet you a coke that you can't hit that yellow X on the end of the taxiway, if the engine quits."

That was all Ron needed to liven up the draggy flight. He closed the throttle to flight idle, applied aft cyclic, lowered the collective pitch, and rolled the maneuverable chopper into a left bank. He knew he was out too far for a normal turning autorotation, but he felt he could make the spot by stretching the final approach.

Ron lowered the nose to keep the airspeed up and quickly checked N-1, EGT, N-2, and airspeed. As he

focused on the X again, Ron thought, it will be close, but the little copter was quite forgiving — and that big cold coke would sure taste good. With the ground approaching rapidly, Ron applied aft cyclic and creeped in collective to get maximum glide in the flare. Everything looked good as the main gear greased on the taxiway right over the yellow X, although the nose was still a little high. Ron rolled the chopper level and sighed a little sigh, a big grin came over his face. He was just turning to Bill to claim that coke when the crew chief's voice rasped over the interphone, "That's a case of beer for me."

Like every other helicopter pilot, Ron knew what that meant: the tail of the helicopter had contacted the taxiway. In this case the damage was not serious; only the fiberglass caps on the bottom of the vertical tail fins were crunched. Fortunately for Capt Rollon his bird suffered only minor damage and his lesson just cost him a case of beer and a little broken pride. Not all rotary wing pilots are so lucky.

* * *

Over the years, practice autorotations have resulted in hard landings, broken empennages, bent tail booms, ripped off landing gear, and more than one scraped tail. Almost without exception, these mishaps would not have happened if the crew had just remembered one thing: the practice autorotation is a training maneuver and must be treated as such.

With training in mind, let's look at some points to consider when planning, briefing, and performing practice autorotations.

Planning

In the preparation phase, take a close look at the wind. Wind *velocity* makes a big difference in how a helicopter reacts when autorotating. Glide distance and rate of descent vary significantly, depending on the wind speed. Also wind *direction*, especially relative to the nose of the aircraft, must be considered. If the wind velocity (including gusts) is: 0-10 knots for H-1 and H-43, or 0-15 knots for H-34, or 0-25 knots for H-3 and H-53, the helicopter's nose must be aligned within 45 degrees of the wind on final approach.

When the velocity (including gusts) is: 11-25 knots for H-1 and H-43, or 16-30 knots for H-34, or 26-30 knots for H-3 and H-53, the helicopter's nose must be aligned within 15 degrees of the wind on final approach. If these criteria cannot be met, don't practice autorotations.

Briefing

At the crew briefing, the pilot in command must ensure that all crewmembers are aware of the maneuvers to be accomplished and the procedures to be followed during the flight. For instance, in the HH-43, the two aft seats on both sides of the cabin are not to be occupied during practice autorotations. On a formal training mission, the IP needs to know the student's proficiency and limitations. A suitable, safe touchdown area is required, and it should be a prepared surfaced runway or taxiway. Autorotations should never be attempted on rough or questionable terrain, over water, on or near runway arresting systems, or near any other obstruction that might tend to create a safety of flight hazard.

Doing

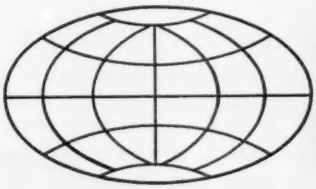
Before actually performing an autorotation, take a good look at the area and ensure it meets the wind and surface standards. Is a wind indicating device located near enough to the selected recovery or touchdown point to provide accurate wind information? Does the intended touchdown area have adequate room for rollout and recovery? Will sloping terrain or noncontrasting surfaces cause optical illusions or depth perception difficulties? Also, do you always complete the "Before Landing Check" before initiating the autorotation and follow the prescribed flight manual procedures?

Once the autorotation is initiated, do you ever stretch *your* capabilities or those of the helicopter? Here is where evaluation and judgment enter the picture. When the approach doesn't look or feel like it should, do you bring in power and take it around? Or, do you wait until the last second and then try to salvage a bad or marginal autorotation just to win a coke or boost your own pride? If so, watch out — you are a candidate for a practice autorotation accident.

Summary

I have discussed several factors that need to be considered when accomplishing practice autorotations. There are other items, I'm sure. "But," you ask, "why all the concern over a simple simulated emergency procedure?" That is just the point: a practice autorotation is only a *simulated* emergency, and we must remember to treat it as such. It must be planned, briefed, and executed as a practice training maneuver. Most important, if the autorotation doesn't look right, start a power recovery early and go around.

Don't take a chance by overlooking any factor or bending the rules. A slightly bent procedure can end up in a major broken airplane.



Global Notes

blue ribbon prime beef

MAC Prime Beef civil engineering team 72-1 has earned the Air Force Organizational Excellence Award for construction of an aeromedical staging facility at Scott. The team was formed out of civil engineering personnel from all MAC CONUS bases. They prepared the site and built the 1,500 square-foot modular unit despite bad weather, design and structural deficiencies, and lack of experience in modular construction.

farewell to ACGS

The Aerospace Cartographic and Geodetic Service has been deactivated after many years of photomapping and specialized geodetic service. Their records include six years without an aircraft accident, two years without a civilian injury, and considerable reductions in the severity of injuries and in the cost of USAF property damage. Well done!

you, too, can stamp out FOD

Everyone who sets foot — or wheel — on the flightline is involved in the foreign object program. Recently, Travis security policemen showed their interest in FOD prevention during their routine patrol of the flightline. In a 24-hour period, they picked up an armload of drink cans, rocks, rags, pieces of wood, and other trash. Any of these items could have damaged an aircraft or tire, but thanks to the concerned SPs they won't now.

new crews prove

Thirty aircrewmen from the 304th Aerospace Rescue & Recovery Squadron, Portland International Airport, OR., put some newly-acquired knowledge to a practical test. Following their recent transition from fixed wing to rotary wing aircraft, they successfully completed a mobility exercise by flying eight HH-34 helicopters from Portland to Hamilton AFB, CA. In addition to proving their skills, the rescue crew demonstrated an extended flying range potential for the 304th's HH-34s.

MAC outstanding individual safety awards OISA

The OISA recognizes significant achievements in accident prevention in any safety functional area. Each winner receives a walnut desk set; details are in MM 900-2, paragraph 6-19.

Those OISA winners who have prevented the loss of valuable Air Force property or saved lives will be recognized here in "Global Notes." Since approval authority for this award rests with MACAF, service, and independent wing commanders (except as stated in the manual), THE MAC FLYER staff's only source of information about award winners is our copy of the letter of nomination. Don't forget to include us if you want winners to be named.

* * *

Since 1 January 1972 awards have gone to the following personnel:

Capt Dennis W. Stiles, 67 ARRSq, for safely landing his passenger-loaded HC-130 in marginal weather conditions with a severe fuselage fuel leak.

Capt Michael W. Cole, 1550 Flying Tng Sq, for his outstanding professional performance after an engine exploded during a training flight in a UH-1N helicopter.

Capt Wayne A. Thronson, 1551 Flying Tng Sq, for the professional airmanship he displayed in handling an in-flight blade damper pin failure in an HH-53.

TSgt Frederick C. Hoffman, Jr., and SSgt Clarence A. Greenbaum, 67 ARRSq, for their quick thinking and fast reaction in reporting fuel leaking from a taxiing HC-130.

SSgt William S. Rutherford, 1550 Orgl Maint Sq, for detecting a crack in one of the L-cranks of an HH-43F during a preflight inspection, thus preventing in-flight crank failure which would have caused complete loss of control.

Mr. Paul R. Sipple, 436 FMSq/TM; Mr. Campbell Smith, 436 FMSq/TM; A1C Donald C. Newsome, 436 LGSF, and TSgt Stephen Gradski, 138 MAGp, for their timely actions to avert a disaster after they detected a malfunction in a C-124 which was being refueled.

How are your radio communication techniques? Clear? Crisp? Precise — or do you slay those philistine frequencies with . . .

the jawbone of an ass

ONE OF THE LARGEST PROBLEMS with our rapidly expanding air traffic system is communication between the aircraft and their controlling or monitoring agencies. It's hard to believe that just a few years ago it was possible for an aircraft to fly all the way across the United States with just an old ARC-3 (8-channel) VHF set, and still have two or more channels to spare. Now, of course, it's common to use five or six frequencies just between engine start and the first turn out of traffic!

Most modern military aircraft are equipped with a whole bevy of radios . . . dual VHF, UHF, FM, single sideband, VOR, ADF, and tacan . . . and the range of frequencies is enormous. And yet it seems there still aren't enough.

As we see it, the problem is that there is entirely too much *unnecessary* radio traffic, thus hindering the effectiveness of the voice communications system. Further, we feel that pilots are by far the worst offenders, though by

jawbone

no means the only ones. If you disagree, just think for a minute. Have you ever:

. . . Had to turn off your guard receiver because there was too much chatter on it, preventing you from hearing transmissions meant for you?

. . . Had to listen to a long, involved passenger briefing given by the pilot of another aircraft who thought he was transmitting on interphone or public address?

. . . Had to go around because someone on tower frequency had his microphone key stuck, preventing you from receiving clearance to land?

. . . Had to delay your takeoff because some other pilot took ten minutes and half-a-dozen repeats to get his clearance read back correctly?

. . . Had to make a 45-degree dog leg back to the final approach course because someone blocked the frequency, preventing the controller from turning you at the proper time?

. . .Had to hold at an en route fix because there was so much chatter that the center controller couldn't get further clearance to you in time?

Well, you get the idea. This list goes on and on — the number of common errors is about equal to the number of frequencies used. We have taken a long look at these errors and categorized them from preflight to engine shutdown. Come along as we make a few comments.

Before Starting Engines

Radio discipline begins when you slide into the co-pilot's seat and put on your headset. You've preflighted your aircraft; now preflight your radio equipment. Make sure your headset fits properly and that all the connections are tight (between the ears too), especially the bayonet fitting connecting the headset to the interphone jackbox cord. These fittings can and do become loose, causing static and intermittent or no reception. A quick twist of the wrist is usually all that's needed to correct the situation.

You should have radio contact with the tower before engine start, so turn on the VHF or UHF and set the microphone selector accordingly. While the set is warming up, *recheck the proper frequency*. You will want ground control, if available, or tower. Check the IFR Supplement or the terminal approach chart for call sign and frequency. If you use UHF, double-check the selector for *manual* position, unless using a preset channel. Double-check the radio channelization card if you're using the preset channels . . . they can and do change from time to time. And listen just a few seconds to make sure the frequency isn't in use.

Glossary

Over — "My transmission is ended and I expect a response from you."
Out — "This conversation is ended and no response is expected."
Affirmative — "Yes" or "permission granted."
Roger — "I have received all of your last transmission." Under no circumstances should you use this as affirmative.
Wilco — "Your last message received, understood, and will be complied with."

Now, just before you touch that mike switch — think! *Think of what you want to say and then don't key the mike until you're ready to say it.* This might seem a little elementary, but getting the whole thing thoroughly clear in your mind before you go on the air will help cut the unnecessary chatter. After this moment of silent rehearsal call the tower by holding the microphone or adjusting it so it just touches your upper lip. Speak clearly and evenly . . . don't talk too fast or too slow. *"McGuire ground control, MAC six zero one two two, radio check two seven five point eight, over."*

Pay close attention to the answer. It should tell you several things . . . whether and how well you are transmitting, how good your receiver is, how well your interphone and volume controls are adjusted. If you don't receive an answer, *wait a reasonable length of time*, then call again. The controller may be busy on another frequency, or he just may not have heard you. If you receive no answer to your second call, recheck all your radio controls, including the circuit breakers, fuses, and all transmitter and receiver control switches. Recycle the set by switching briefly to another frequency, then back to the original. Listen a minute or two. If you hear the controller talking to others, your receiver is okay, so try the transmitter again. If still no answer, shut the set off and call maintenance.

There are a couple of practices which tend to exasperate everyone on frequency. For example, don't just

sit there making call after call even though no one answers and you can hear nothing. Receivers do fail, and a transmitter gone wild can block other transmissions for miles around. Another item we can do without: after selecting a frequency, holding the tone button down until a long "Beeeeeeeep!" is heard is bad news. Your needless noise is only a shade less rude than the old "blow out your mike" bit.

If all goes well, you will get a "loud and clear" from the tower. Now check the rest of your comm gear and then proceed with your engine start checklist.

Ground Operations

After engines are running, and if provided on your particular checklist, turn on all the radios so they can warm up while you are taxiing out. Remember, some ramps have "blind" spots and the location of antennae on some aircraft reduces radio effectiveness in certain directions, so you may not have perfect voice contact throughout your taxi route. While taxiing, do *not* try to tune or otherwise operate your radios, except to make required contacts with ground control or tower. Your full attention should be devoted to helping the pilot watch for other traffic, obstructions, etc.

After the aircraft is safely parked for predeparture checks or engine runup, your business as a professional pilot-type radio operator really begins. First, you will want to set and check each navigational radio, as desired by the aircraft commander. Plan your departure communications by setting the appropriate departure control frequency, tower (normally preset), etc., in a logical order. Try to reduce to a bare minimum the number of changes you have to make during and immediately after takeoff. With dual VHF or UHF radios, you should have one radio preset to the next frequency; this makes the transitions from one agency to another quicker and with less chance of error.

Try to work the radios so that the AC doesn't have to keep switching back and forth between UHF and VHF. Remember also that during and just after takeoff, especially on black murky nights or in the soup, you want to concentrate on helping the pilot who is flying the aircraft make a *safe* departure, so *stay off the radios until you reach a safe altitude.*

En Route Communications

Departure control will turn you over to center as soon as you approach the boundary of the local control area. You can help reduce unnecessary radio chatter by knowing the limits of this area and any altitude restrictions that are normally applied. Check with base operations or ACP. Better yet, if you have the chance, visit the local rapcon. They'll be glad to help you. One of the things they'll probably tell you is to *acknowledge the assigned center frequency* when they give it to you. If you don't, they aren't sure that you received it and will have to check with center or try to call you back before you switch frequencies.

Since pale ink is better than the strongest memory, your best bet is to write down every frequency you're given. Not only will this help you verify the numbers, but you will have the frequency available if you need it again.

Another thing. If you can't contact the center on the assigned frequency, *go back to the last frequency you were assigned* and ask for an alternate. Do not try to outguess the system by picking a frequency from the FLIP or memory. You'll just get lost and cause a lot of trouble while everyone tries to regain contact with you!

As you go from center to center you will be crossing numerous subdivisions or sectors, each of which has its own radar screen, controller and discrete frequencies. These controllers, as do all controllers, use very precise procedures . . . including voice communications . . . to control your flight safely. You can help a great deal to help them help you *if you will be just as precise as they are.* This means that you must know exactly what certain words and phrases they use mean and what is expected of you in return. The phrase "*radar contact,*" for example, means that you are no longer required to give voice position reports. "*radar contact lost*" or *radar service terminated*" means that you should begin position reporting over the next compulsory check point and continue until you are once again in "*radar contact.*"

Each time you contact a new sector controller you are expected to give your identification and altitude or flight level. A proper example might be "*Kansas City center, this is MAC six zero one two two, at one seven thousand, over.*" Even this can be reduced when no confusion is likely to ensue. You should shorten it to "*Kansas City* (only the center is on the frequency, so you can omit the call sign "center"), *MAC six zero one two two* (omitting "this is"), *one seven thousand* (omitting "over"). Later on, after contact is established, you may be able to shorten it more by cutting out the first two numbers of your call sign. *(continued)*

jawbone

When the controller answers, he may or may not ask you to *squawk ident*. Do *not* anticipate that he *will* and automatically hit the ident switch as you call in! You can cause all sorts of confusion, and create the need for more radio calls, by lighting up a *second* target on the controller's radar screen! And squawking when he asks is enough — you don't need to add any extra radio call. Incidentally, one of the main purposes of your ident squawk is to tell the last controller that the next sector controller has picked you up. Squawking before you're asked may mean nobody has you.

When in contact with a center, confine all radio transmissions to official business, specifically that having to do with the control of IFR traffic. *Make only required transmissions.* These are listed in Section II, FLIP Planning, and include reaching a fix, leaving an altitude or fix, executing a missed approach, correcting an ETA by three minutes or more, changing your TAS by 10 knots or more, and changing altitude when "VFR on top." Otherwise, just answer the man's questions . . . briefly.

Another way you can help to reduce the controller's workload is to monitor other radios for information you need — altimeter settings, weather, etc. If you need a full weather briefing, or wish to file or activate a flight plan, or pass on some arrival information, contact PFSV (call sign Podunk Metro), the nearest flight service station (call sign may not be the same as the radio . . . check the brackets below the identification box for the controlling area radio), base operations (PTD 372.2, usually) or ACP. And don't forget ATIS — at some airports it may be part of your landing ticket. Before you do, however, ask the other pilot to monitor the assigned center frequency or ask the controller for permission to leave the frequency, check the en route chart first and note whether or not you're nearing a new center boundary. If you are, you might just as well wait a while because he probably won't clear you until after you've contacted the new center.

Exercises

"Uh, Cleveland sinner, ol' buddy, this is, uh, MAC, uh, six zero, uh, one twenny two, uh, we're about 'leven mile from Water, uh, Waterville, at, uh, fifteen angels and, uh, we'd like to climb to, uh, angels one point seven because, uh, we're getting bounced around pretty good, uh, at this flight level and, uh, our passengers are getting a little woozy. Over."

Let's clean this transmission up a bit and see if we can't say the same thing a mite more professionally. First, let's scratch out all the "uhs." They don't add a thing, but they sure subtract both time and understanding. Next, let's scratch all the deadhead words that add nothing to the clarity of the request, such as "this is," "we'd like to," and so on.

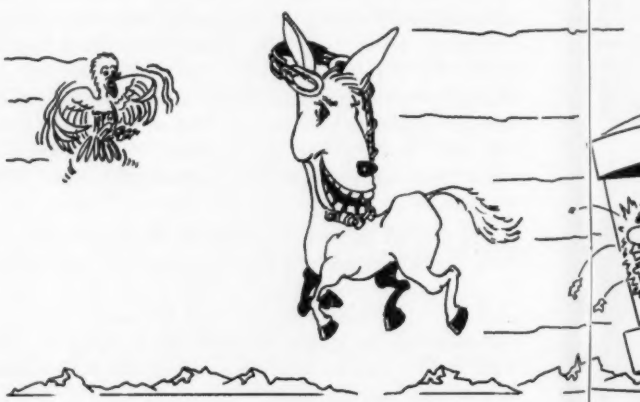
Then let's omit all the information the controller already knows (such as your position — it wasn't too clear anyhow, being only localized to a radius of eleven statute (or nautical?) miles from Waterville Vortac), or doesn't need (such as the number of airsick passengers aboard), or won't understand (angels, anyone?).

Finally, let's change what's left into words and phrases with precise meanings. The result looks like this:

"Cleveland center, MAC one two two, request one seven thousand."

After a while, it'll come easy. Want to try another one? Okay, let's see what we can do with this (yecch!) "position report":

"Oakland center, this is Air Force seven two one six three, over Stockton Vortac at twenty-three past the hour and we're uh, at fifteen thousand feet, uh, on an



instrument flight plan, and we're, uh, estimating Fresno Vortac at fifteen oh seven Zulu and, uh, our next check point will be Bakersfield Vortac, over."

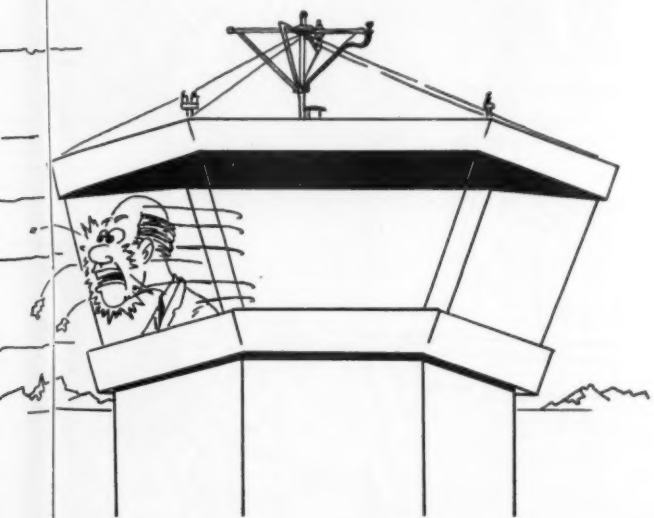
Using our blue pencil liberally we can immediately scratch out all the "uhs," as before. Then toss out all those deadheads. Scratch "over" and all those "vortacs" as nonessential. "Past the hours" goes . . . obviously . . . as does "Zulu" and "our next check point!" Clean up what's left, put it in standard phrases, and we come up with this:

"*Oakland Center, Air Force seven two one six three, Stockton at two three, one five thousand, Fresno at zero seven, Bakersfield.*"

Neat, huh? And look at the time we've saved. If we can just cut the time of each of these myriad transmissions in half, *we will have effectively doubled the communications capacity of the current air traffic control system without spending a dime!* Worth a try, right? More importantly, we could make flying easier for everyone while reducing the ulcer rate of all our hardworking air traffic controllers.

Approach and Landing

Not long ago the controllers in a stateside rapcon facility were startled by a loud banging on their door about 0300 one morning. They buzzed it open and an irate field grader charged in demanding to know how come they had just vectored his aircraft through turbulence during his approach. He stated in unequivocal terms what he thought of "stupid controllers" who couldn't "see that rough stuff" on their screens and steer him around it. He was politely shown the scopes in use and asked if he would point out the area he meant. Slowly it dawned on this pilot, as he stared slack-mouthed at the blank screen, that wind shear or clear air turbulence doesn't show up on radar. Neither, in fact, do lots of other things, but some pilots have failed to stay current in the technology of air traffic control and they don't really know what the system can and can't do.



More recently, another irate pilot, probably some kin to the one above, badmouthed the radar controllers for not giving him altitudes on final for a surveillance approach. "Whassa matter with you guys," he roared, "don't you know your jobs?" We really can't sympathize with him because he *doesn't* know *his* job.

Furthermore, many pilots are still using old, obsolete phraseology. They still call "Dover GCA" instead of "Dover Radar" and they ask for a "GCA" instead of a "precision" or "surveillance" approach.

While maneuvering to land from a precision approach, or while following radar vectors, don't clutter the ether with long, involved conversations. The controller expects you to acknowledge changes in headings and altitudes and to read back the current altimeter setting, but beyond that all you have to say, after initial contact is established, is simply "Roger."

Thinking ahead to the landing, look up the frequency for ground control and set it up on another radio if you have one. If not, be ready to dial it in when cleared by the controller. If you have a long, long runway and won't be able to clear off right away, you'd better be ready to contact the tower before going to ground control, so check that frequency, too.

Summary

Briefly, you can help tremendously to ease the terrific communications problem by:

Knowing your aircraft radios and how to use them properly.

Knowing and using current, correct call signs and terminology.

Knowing and making only required reports.

Keeping all transmissions brief and to the point.

Copy? Wilco!

A bunch of MAC Flyers were whooping it up
On the shore of the Wake Lagoon,
Gathered together for story and song
In the Drifter's Reef Saloon,

Grousing at rules that kept them there
Instead of in Hono-lu;
Counting the hours remaining to drink
(How many? It's twelve plus two.)

When out of the rain and storm of the night,
And into the white lamp's glare,
There stumbled a man in raggedy greens
With sand in his beard and his hair.

He looked like a crewman because of his garb,
This salt-crusted, storm-ravaged guest.
Some threads from a MAC patch, so faded and torn,
A sharp eye could find on his chest.

The place grew quite still as he walked to the bar
And croaked out an order for gin.
Then, clutching his glass in his coral-scarred hand,
He eyed every man jack therein.

His eyes were of green, like the depths of the sea,
And they looked as though set in a well.
And those orbs had a message for all who could see
That this man knew the torments of hell.

The hand raised the glass, and his lips found the rim;
A thin trickle poured down his chin.
Then, smoothing his beard with the back of his wrist,
He coughed and said, "Let me begin."

"It all started back in the days of cadets,
In the years before black shoes and blues.
Instead of me choosing to fly like a man,
I majored in women and booze.

"I guess I was lucky; I know I got help,
And somehow I made my way through.
Then one sunny day someone pinned on my wings
And told me 'It's all up to you.'

"Of all of the places I could have been sent,
Like Training Command, TAC or SAC,
They gave me the job that I wanted the most —
I'd spend my years flying for MAC.

"And when I checked in, Oh! so eager to start,
They scheduled me back into school.
But I was a hot rock and I knew it all,
So I spent my time at the pool.

"To heck with procedures for three-engine climb,
It's easy to see we got four.
Just line up this beast with the wind on her nose
While the engineer lays on full bore.

From out of the past we present...

The Ghost Of D

t...

f Drifter's Reef

by Major Grover C. Tate, Jr. (Ret)

"Who cares, reasoned I, where the fuses are hid,
Who cares for the words that spell PAM?
Just show me about where the throttles are at,
And it's off to the blue, like Shazam!

"It's never my worry to preflight the bird;
Leave that for the maintenance toad.
And get him to sign off those silly red marks;
We must get this show on the road.

"And all of this jazz about planning the flight!
Half-way makes a good E-T-P.
Just tell me, old boss, where the cargo must go
And then leave the flying to me.

"At last I returned to my unit again,
And begged them to please let me fly.
They needed a man on that very same eve
To go bore a hole in the sky.

"The night was as black as a coal miner's sock,
When our plane roared away toward the sea.
Then the nav stuck his hand through the drapes at my back
With a message to give M-C-C.

"I glanced with surprise at the words on the sheet
Which the 'gator said *had* to be sent,
'Cause the place we were going was known to all hands,
And so was the time we had went.

"So I laid it on top of 'Procedures, Enroute,'
And wadded them all in a bunch,
Then tossed it aside while I levelled her off
And called for my first inflight lunch.

"In the mellow white light from the thunderstorm lamp
I glanced at the man 'cross the aisle.
I knew in a flash that we'd sure get along,
'Cause his face held the trace of a smile.

"His arms dangled down by the side of his seat,
His chest made a rest for his head,
And the sound of his snores as we bored through the night
Gave me confidence I couldn't shed.

"It was only an hour, as best I recall,
When: 'Pilot, we've lost number 2'
Came crackling over the interphone wire;
I *instantly* knew what to do.

" 'Press on, I replied, in my best pilot tone,
'Four minus one still leaves three.'
'But, sir,' came the voice of our first engineer,
'Let's go back to Travis, prithee?'

" 'Quite right,' said the 'gator, quick joining the fray,
'The book says go back toward the sun.'
'What book, lad?' I asked in a fatherly voice.
His answer: 'MAC fifty-five one.'

" 'The equal time point still lies over our nose;
Make a one-eighty, please,' cried the nav,
'We're going to Hickam, Magellan,' I yelled,
'And no more of your lip will I have.

"The silence right then was a welcome relief,
And for minutes the feeling was grand.
Then a voice said 'Our fuel isn't going to last,
You better start looking for land.'

"Then the 'gator climbed in with a worrisome note,
'Pardon me; you're three AIREPS in debt.'
I took a deep breath, then in leadership tones,
Answered, 'Gentlemen, negative sweat.'

"Behind us the dawn was attacking the night;
We flew on in an ocean of grey.
The clouds which had covered the stars from our sight
Now were hiding the sun the same way.

"The man on my left shook himself from his snooze
And requested the last status quo.
I flashed him the sign that *okay* was the word
And we only had three hours to go.

"I told him one engine was taking a rest,
And fuel was not overly fat,
But we had a heading that seemed mighty good,
And he could take comfort from that.

"I mentioned the AIREPs that hadn't been sent,
The radar that acted so sick,
The fact that the 'gator had lost his Loran,
The radio's clickety-click.

"I knew by the way that he sagged in his seat,
That to him it must all be a joke.
(Twas later I learned, from a medical tech,
That the poor chap had suffered a stroke.)

"To wrap it all up in a couple of words,
And to save you the gory remarks,
We DRd our way to some ATC steers
And we managed to outfox the sharks.

"I greased in the bird on the runway they named,
Then taxied her in to the ramp.
The fellers who met me when I touched the ground,
Had hands awful clammy and damp.

"They read me the regs I had broken and bent,
They showed me the rules I'd ignored.
They hit me with everything under the sun,
And left me, quite lit'rally, floored.

"They tied me with chains on my hands and my feet;
I was laid in a casket-like box.
Then they fastened the lid with a handful of spikes
And they wrapped on more chain, using locks.

"Ten hours in the back of a one-twenty-four,
Then they pitched out my 'coffin' near Wake.
The box split in two as it hit on the reef,
And I floated ashore like a snake.

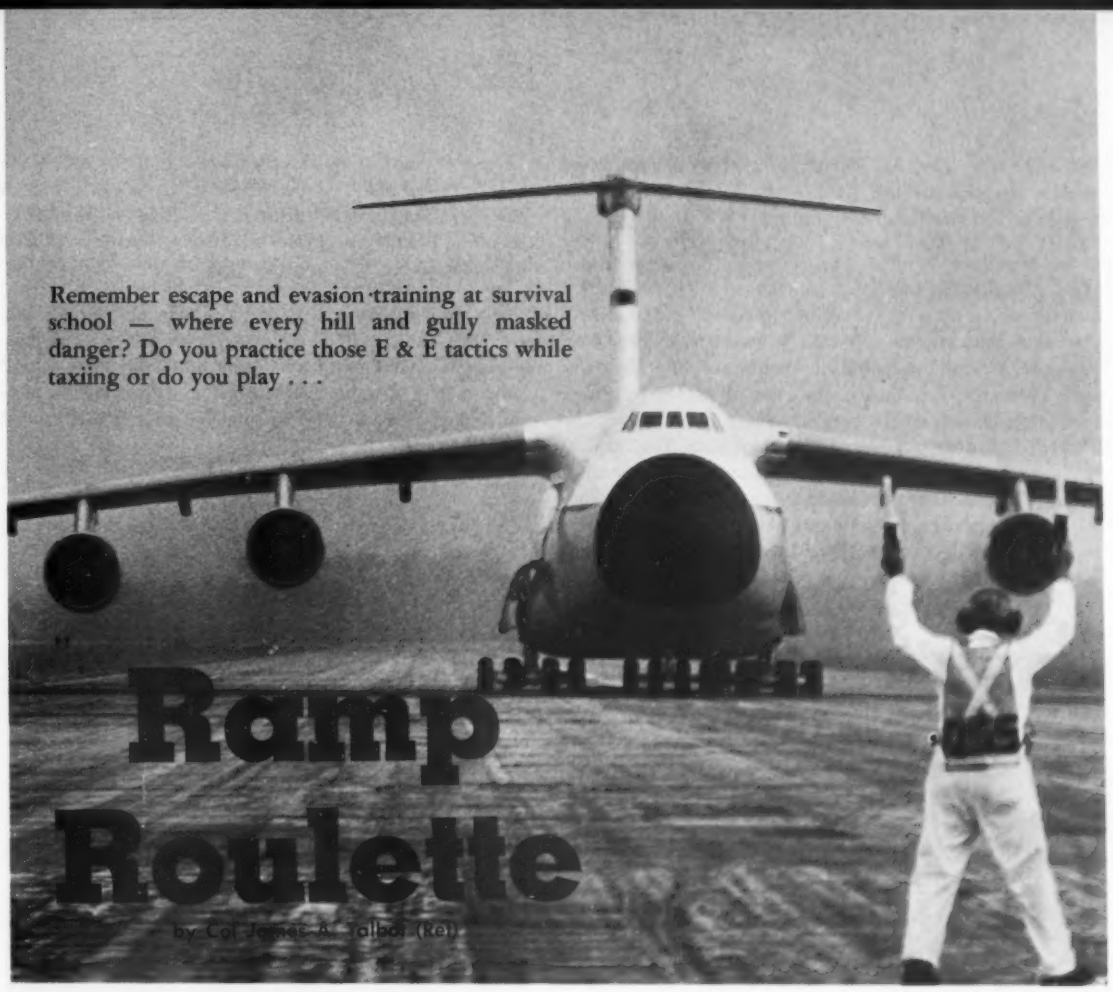
"No one sees me here but the members of crews,
'Cause to them I'm a lesson retold.
I only appear in the dark of the night,
When the weather is low, damp and cold.

"And so, my MAC friends, buy me something to drink,
Heed my story of ruin and rack.
Please remember the man who goes forth without smarts,
Will eventually never come back."

He paused; in a flash someone refilled his glass
And he gulped down the drink with a smile.
Then he left as he came, in a flurry of wind,
For his home on the tiny Wake isle.

I am sure he's still there, this outcast from a crew
With his raggedy greens and his beard.
And whenever you sit in the Drifter's Reef Bar
Keep an eye peeled for something quite weird.

For I reckon he'll never be able to leave
Until all of our men get to look
And to hear him recite his sad, heart-rending tale
Of the man who knew more than The Book.



Remember escape and evasion training at survival school — where every hill and gully masked danger? Do you practice those E & E tactics while taxiing or do you play . . .

Ramp Roulette

by Col James A. Talbot (Ret)

TAXI MISHAPS CAN, AND DO, OCCUR with painful regularity. The accident and incident files are full of reports verifying that two objects cannot occupy the same space at the same time. There aren't any statistics, however, showing how many scrapes occurred that weren't, by definition, reportable. Nor are there any figures showing how many hair-breadth misses occurred.

What, then, is the problem? Why do we have such mishaps? While there is probably no *good* excuse for having a taxi accident, there are situations, circumstances, and conditions facing the poor pilot that make it awfully difficult to park or maneuver on the ground. Let's discuss a few.

Purpose

To begin, we must remember that an aircraft was designed for *air operation*, not ground operation. In its element, the aircraft and crew can take care of themselves pretty well. Visibility is excellent straight ahead, which is usually the pilot's prime concern. Radar is available to identify mountains or other obstructions. Flight controls are provided for maneuvering, and after touchdown, brakes and reverse are there for stopping.

But, when we get on the ground, we need to see in every direction, *not* just straight ahead. Ramps are cluttered with everything from fire extinguishers to crew buses and telephone poles, all unlighted. Because of the clutter and hazards, definite limitations are placed on speed, turning radius and reversing during ground maneuvering. An aircraft, when on the ground, is in a hostile world.

Aircraft Design

With the side-by-side seating arrangement of most MAC transports, the pilot can scan his left wing only. Conversely, the copilot can scan his right wing only. This lack of ability on the part of the pilot to see the progress of his right wing must account for the greater number of right wing contacts we've experienced. However, there is

an even worse situation where the cockpit crew can't see either wingtip. In the RB-57F, two huge jet engine cowlings completely obscure the outboard wing sections. The C-5 is another case in point.

Wing Sweep & Droop

Swept wing design presents a problem. Where the straight wing radius follows a simple arc once the turn is started, we find, that in the case of the swept wing, the wingtip radius actually extends when the turn is started and does not become constant until the turn is well established. And the C-5 driver must be aware that the tail radius extends beyond the wing radius. The situation is similar to a stake bed truck parked closely against the side of a building for side loading. If an immediate turn is made when the driver starts off, the rear of the truck bed will swing into the side of the building.

A point that must be made about the C-141, because of its design peculiarity, is the height of the wingtip above the ground. Vertical clearance is barely enough to pass over a circus midget, yet attempts have been made to get wingtips over power units, pickup trucks and stepvans.

Misparked

Equipment and aircraft both can be misparked. Within the last year, two instances of parked aircraft not being correctly spotted have been the cause of taxi accidents. Both were, as you might expect, hit by other aircraft which were adhering to painted guidelines.

Why? Complacency, surely; once a plane comes to rest extending into the clear zone, no tow crew is assembled to back it into correct position. Time also could be a factor in that towing was considered, but the hazard resulted in an accident before the tow team could get there or because someone forgot. Ignorance or lack of safety awareness is also a good possibility.

Line chiefs and other supervisors should take a continuing look at their parking area and keep it clear of obstructions.

Communicating

Lack of communication between the marshaler and the cockpit is undoubtedly the greatest potential cause factor involving the ground crew. (This is why we need radios for ground marshalers.) It may be compounded by a lack of communication among members of the ground crew themselves. The team chief can't see both wing walkers simultaneously, and whistles and hand signals just don't hack it, especially if an immediate response is needed. If this operation is to be done efficiently, all personnel must know exactly what signals to use, when to use them, and — above all — when to call a halt to the operation if doubt exists. If it is done "by the book" there is usually no problem; if not, there is usually a catastrophe!

Airfield Markings

A good point to remember is that taxi lines *do not* provide any specific clearance from either obstructions or parked aircraft. The commander of a fighter outfit

THIS POLE PUT A PLANE OUT OF COMMISSION. Beware of the myriad of hazards lurking close to the yellow brick road. A wing tip found this one.

may have lovely lines painted for his F-4s but they won't hack it for a MAC transport or civil air carrier. Additionally, saturation of base facilities has led to numerous changes to previous parking plans which, in turn, required repainting and obliterating existing lines. In many cases the obliterated lines actually show up better under certain weather conditions than the primary ones. Also, the parking plan may have just been changed and Civil Engineering hasn't as yet gotten around to painting out the old lines.

Shared Responsibility

The responsibility for avoiding an accident is the pilot's. He has the ground crew, nose wheel steering, experience, and his eyes, plus the copilot and scanner, whatever lighting is available, and brakes in case the situation falls apart and a stop must be made.

We all agree that primarily the pilot's eyes, and their ability to perceive depth, produce the judgment as to whether or not there is enough clearance. Are we perhaps asking too much of them? Are we perhaps relying on them too much, considering the conditions under which we use them? Anyone working on the flightline shares the responsibility for an efficient operation.

Depth Perception

Way back in the brown shoe days, pilots sat down, were handed two well-worn, greasy strings attached to pegs 20 feet away, and told to line the pegs up. If successful on this "Howard Dohlman Apparatus," the pilot could bring the pegs to rest within 30 mm (1.2 in.) of each other. If he couldn't, no need for him to learn how to spell pilot, much less try to be one.

We have become more sophisticated in the ensuing years and this by-product of the Spanish Inquisition has been replaced by little black boxes. The tests are conducted under optimum lighting, you have little if any fatigue, and the test equipment is stationary and directly in front of you. This is a far cry from the real world of the cockpit where lighting is not only poor, but possibly illusory, a twenty-plus hour duty day may be involved and movement is a requirement for parking.

The fact that the wingtip is at the side and usually behind the pilot warrants more than a few words. I mentioned that the test equipment is directly in front of the victim. This allows the eyes to be at their maximum separation, and this mechanical capability of each eye to perceive a different image gives us the judgment of depth or relative position. When the pilot turns his head, however, he may actually only be able to see his wingtip out of one eye because he can't turn his head far enough while still holding the nose wheel steering and throttles. This definitely has an adverse affect on the depth perception he needs.

This is a small problem with straight-wing birds, a larger problem with the C-141, and enormously significant when we talk about the C-5. From the centerline of the Galaxy the distance to the wingtip is only 111.4 feet (span 222.7 feet). However, because of the location of the cockpit in front of the wing, the actual distance the pilot must view is just over 160 feet! Now, to precisely judge any relative separation using only one eye or when the mechanical ability of both eyes to perceive different images is seriously impaired because the pilot's head is turned, is going to be virtually impossible. Let's compound the situation and put a wing walker out at the tip making wild gyrations with only one wand, okay? On second thought, let's don't.

Weather & Precip

Taxiing at night on a strange ramp is a problem for all pilots. Carlsbad Cavern in a blackout looks like

BLACK, RAINY, MURKY NIGHTS add a fourth dimension to the taxi labyrinth. These nights seem to be the rule rather than the exception.

Broadway compared to the inky blackness some of our ramps offer on rainy nights.

We have no windshield wipers to increase side window visibility, yet good visibility is more important in this

direction than to the front: at least to the front, there is some lighting available. Obstructions will be hidden or camouflaged and a rain-spattered window only compounds the problem.

POSSIBLE SOLUTIONS

Training

Pure statistics in the form of more right wing dings than left indicate to me that, while the copilot's depth perception abilities are every bit as good as the pilot's, lack of experience and failure to accept responsibility for his side of the airframe reduce this "help" considerably. Unfortunately, this aspect of the upgrade program can't be covered in the simulator. However, on transition flights, IPs should frequently ask their students to make evaluations of whether it would be safe to proceed under certain conditions and determine just how far, or how close they estimate their wing is from other obstructions. Flight examiners should closely observe crew coordination and evaluate those in the right seat on how they react when clearances get marginal. The ultimate, of course, would be actual practice in an area equipped with tangible obstructions which would also provide a training medium for ground crews. Certainly, proficiency evaluations should encompass more than a flight starting with a max power application on the runway and ending with a landing.

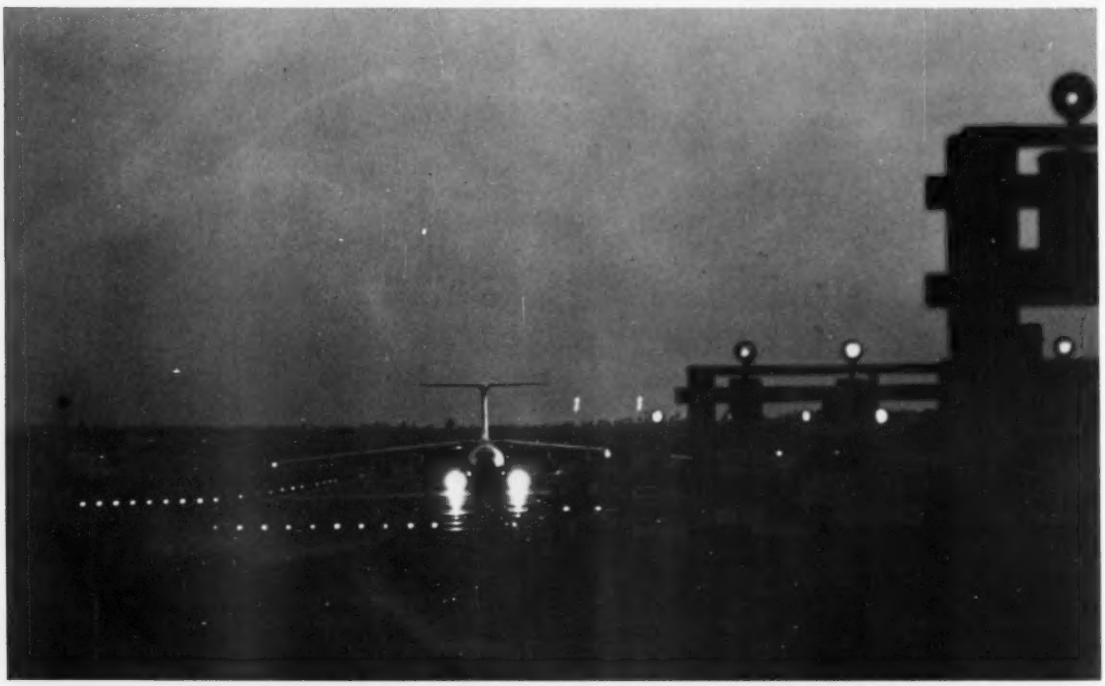
Lights

Several possibilities are apparent. Why not have flush-mounted lights at the wingtips that shine straight down and thus give a ground reference as to how far the wing extends, in addition to illuminating obstructions as they are approached? Perhaps aircraft could have two additional landing lights mounted farther out beyond the outboard nacelles. We can make the landing lights retract and extend, so couldn't we install equipment to make them swivel, too?

Cockpit

Equipment in the cockpit should be augmented to make ground operation safer and easier. For one thing, not all turns made on the ground are left turns. Why not a steering wheel on the copilot's side? All it would take is another steering wheel on the right side coupled by a bicycle chain beneath the floor to the pilot's steering column. An additional benefit would accrue to IPs on instructional flights.

Visibility out of the side windows is every bit as important as out the front, especially with the size of present



AN OBSTACLE COURSE LOOMS AHEAD as you terminate a vital mission.

and future aircraft. Side window wipers or rain removal systems are an expense that should easily be justified.

Equipment

The cylindrical wand now in use by ground crews is barely satisfactory. A study might be made considering use of different sizes and colors to eliminate misunderstanding.

We now have discrete frequencies for ground control, clearance delivery, tower, etc., so why not have a similar setup for marshalers using nontactical radios? (We, some day, might get them for C-5 operations.) In this manner, the ground controller could explain what he wanted the pilot to do which would eliminate many of the very abrupt maneuvers that seem to accompany many a parking exercise.

Parking Areas

There is a possibility that all the money we pour into paint and striping our ramps could be used more effectively. For example, why not use "cat's eyes" (small reflectors) at frequent intervals to denote parking lines? Two placed side by side would indicate where the nose wheel should be parked. A definite advantage would accrue in that they could be removed and relocated without the time consuming and expensive chore of obliterating old lines if the parking plan were changed. And they certainly would be easier to see at night, especially if it's raining.

Highlighting of all equipment used in the ramp environment with reflective tape will certainly assist pilots at night. This is covered in tech orders, but the degree of compliance and condition of the tape varies considerably from base to base.

Ground Crew Training

Ground crews need a better understanding of the pilot's problems. How many ground crewmembers have stood in the cockpit and watched over a pilot's shoulder while he was being parked? The importance of the teamwork of the ground crew cannot be overemphasized.

Technique

Here are some tips we have used to determine whether we've had sufficient clearance. If the time is around noon, and if the object you want to avoid is roughly the same height as your wingtip, look at the shadows cast on the ground. If the sun is approximately overhead, you can tell within several inches whether you have adequate clearance by the separation of the shadows. (We're not suggesting for a minute that anyone shoot for inches!)

Also on dark rainy nights your vision is greatly improved by opening the side windows. If you are hesitant about using the window because it might be hard to close, use it and then if you can't close it — write it up. *The windows can be adjusted.* On the C-141, a combination of the over wing lights and the landing lights form a triangle on the ground just outside of the wingtip. The distance outside of the wingtip will vary with the height of the wingtip and the position of the landing light. But it will always be outside the wingtip. Still another technique in the C-141 is shining the Aldis lamp out the open side window, but make sure the window is open or you will blind everyone in the cockpit. A tip for anyone whose airplane has retractable landing lights is to experiment with the retraction angle. This will give added illumination without producing glare or blinding the marshaler. Everyone can use a scanner in the side window when clearance is close, and be sure never to let the checklist interfere with your outside vigilance. And finally wait for a wing walker or deplane the scanner anytime taxiway clearance is questionable. If you have any doubts, or the clearance is obviously less than ten feet, shut down and let maintenance tow your machine.

If it's going to be close—tow it!

Regulations

We all know about 25 feet-10 feet or cut 'em, and proper hand and wand signals. Or do we? For example, what are the differences between AFR 60-11 and ICAO procedures? What is the difference between FAA, Navy, and Army?

AFR 60-11 was probably adequate for a Gooney Bird or a B-17, but is it still appropriate for the size of present equipment? The C-5 needs a lot more real estate to play around in because consistently accurate determination of precisely 25 ft or 10 ft at a range of 160 ft is impossible.

Summary

There may not be any *good* excuses for taxi accidents but there are problems whenever you move an airframe on the ground. These problems include human or physiological factors, size and design of the airframe, the equipment used, the skill of both ground and flight crews, and inclement weather. Is it any wonder that a weapon system designed for flight becomes such an accident potential when out of its intended environment?

Some things only happen once a year — and C. R. learns that the annual exercise can be more than just square filling.

C.R. TERROR

ROBIN 32, this is Clark approach. We'll put you in a rectangular pattern until you get your gear down. Understand you're able to maintain only 2,300 feet. We'll keep you well clear of Mount Arayat. Please confirm that numbers three and four are feathered and you may have to feather number one."

Tension was rife on the flight deck, and at the sudden shrill clamor of the alarm bell, the World's Greatest Aviator bailed out, his pudgy paw grasping for the D-ring. He was falling — falling — *wack!* he hit the floor and the ringing stopped. The Rotund One picked himself up and rubbed his tub-type tummy where he could still feel the indentation of the alarm clock.

"Phew!" he said aloud, "I'm glad that was only a dream. Musta been that last olive I had last night — or was it this morning?"

The Aerial Ace was TDY to the land of sunshine, the playground of the south, taking his annual simulator refresher course. Today was ride four, and then — back to "Guam is Good." What a wonderful week in the land of the big BX, with hot and cold running water, pine trees, and an ocean on only one side. He quickly showered, shaved, and hurried to the simulator building.

* * *

The briefing and the question and answer period went without a hitch. The Able Aeronaut, with his copilot, Long Suffering Sam, and the flight mechanic, Max Torque, had worked hard during the week. C. R. and Max had made sure they didn't miss any of the establishments in the Fort Walton Beach area, and good old Sam spent his midnight oil making sure all the review questions were answered. This final flight would be a Form 4 check from Guam to Clark, a route they had been over many times together.

Sam took the left seat at the start of the period with C. R. as copilot. The two hours went quickly. Sam handled the engine start, hydraulic, and icing problems extremely well — with no help from the Pudgy Pilot who was caught cat napping several times. Sam made an emergency return back to Andersen, and then it was time for the Master Manipulator to prove his prowess as an Able Aeronaut.

C. R. took the left seat and departed Guam. Several small emergencies arose but the Aerial Ace handled them promptly and correctly. Then the simulator instructor, Maj Haskel, froze their position and the crew talked about several emergencies.

* * *

"Major Terror, I just repositioned the aircraft at Dillis — 14 degrees 34 minutes north, 124 degrees 00 minutes east. See your position there on your chart?" the instructor pointed.

"Haskel m'boy, turn me loose! I almost have Clark Field in sight. Let's get the show on the road and finish this flight. The beach is awaiting!" And with a flick of his hand, the instructor put the simulator in motion.

"Sammy, give ole Clark Airways a jingle and tell them our present position," the Paunchy Pontificator rattled. "Then get on the horn to Manila and see if we can close down this noisy HF."

"Roger, chief," Sam responded and went about his tasks on the radios. When he finished, his attention was drawn to a nacelle overheat warning on the instrument panel.

"Hey, boss, we have a nacelle overheat on number two!" Sam blurted.

"Fire emergency control handle pull!" belched the Fat One, as he came to life.

"Pulled," responded Sam.

"Engine condition lever feather!" C. R. called as his mind raced through the bold face emergency procedures.

"Feathered," answered Sam.

"Fire extinguisher agent discharged! Flaps and Gear Up! Clean-up checklist!" sounded C. R.

"Discharged, and the flaps and gear are up. Clean-up checklist," Sam repeated, then busied himself finishing the checklist while the Master Manipulator of Wires and Tires trimmed the bird up for three-engine flight.

C. R. broke the short-lived silence as he ordered Sam to contact Clark approach over Jomalig and close down with Manila.

"Ya know Sam, it's a real pleasure to be flying an overpowered bird. Did you notice that I only lost two knots airspeed during that little drill?" Sam nodded his head and Sgt Torque cut into the conversation.

"Sir, we've exceeded the torque limits and I think we'd better reduce power a little and save our good engines." The Prince of the Typhoon Penetrators eased back on the throttles a little and grinned at Sam, who had a frown on his face.

"Come on, Sammy m'boy, this is a simulator. The sooner we land the sooner we get back on the beach. Remember, tomorrow it's back to good ole Guam."

Sam acknowledged with, "Roger, chief, we're passing Jomalig. Clark is on UHF and we're cleared to descend to FL070. I told them we had number two shut down and we're declaring an emergency."

"Sammy m'lad, you're sharp. I'm glad I've got you as my copilot — you're learnin', m'boy, you're learnin'," and with that he leaned over and gave his copilot a slap on the shoulder. The simulator instructor seized the opportunity to give the crew a runway prop. The terrifying *whirrrr* brought C. R. upright, his pudgy paws flailing in the air, but Sgt Torque was right on it and had the problem well under control before the Gross Gripper of Go Levers had a chance to react.

The remainder of the flight and the two engine approaches at Clark went like precision clock work. The yearly simulator training was over, and the Trio of True Professionals adjourned to the coffee shop to listen to their instructor's mission debriefing.

"Major Terror," Maj Haskel began, "overall you did a fine job. Your attitude at times was a little slipshod and you could have been a little better prepared." He hesitated a moment and then continued, "but frankly from all the stories I've heard about you, I expected you to do a lot worse." C. R.'s previously puffed chest deflated two inches. "Items you should try to improve on are crew coordination and crew control. You should use them more than you do. This plane wasn't designed to be crewed by only one person. And you should improve on thinking ahead. I noticed on several occasions you tended to be a little too relaxed while handling an emergency. For example, overboosting the engines. I really don't think you thought of all the possible ramifications that could develop from an emergency. After you take care of the immediate action items and have things under control, have someone get the Dash One out and read all the notes and warnings — make sure you're aware of everything."

He then turned to Sam and continued. "Sam, you and Sergeant Torque did an outstanding job supporting the pilot. As a matter of fact, both of you kept things from coming unglued several times. I think all of you used the simulator training to your advantage — as an excellent learning and refresher course.

"Any questions or comments?"

There was silence and then C. R. spoke. "Yes, sir. Just how did you get such a plush job here in the playground of the south?" As a huge tear began forming in the instructor's eye, C. R. gingerly stepped through the door into the bright sunlight.

Flying a desk and trying to stay proficient in an airplane at the same time are difficult, but not impossible.

Ten Minutes to Live . . .

or how to stay proficient even tho attached

by Lt Col Richard L. Anderson (Ret)

IF YOU ARE a typical attached mission support pilot your biggest problem is time . . . there just never seems to be enough of it. Your primary desk-bound duties are complete with after-hours flaps, overtime, and social obligations. Your family's demands for attention can't be ignored, either. Your own interests also vie for a share of that strictly limited daily 24 hours. You need an occasional night out with the boys, a happy hour or two, and of course there's the bowling league, aero club, jogging, or whatever else you enjoy.

For all too many of us, this means that our flying proficiency slips to something less than number one priority. There always seems to be something else more pressing.

It needn't be that way. It is possible and *practical* to maintain a safe level of proficiency without losing any real time at all. Here are a few tips, each of which takes only ten minutes.

1. Keep your Dash One handy. If you work at a desk, keep it right there. You probably have a morning cup of coffee while exchanging a few pleasantries with your coworkers. Why not drag out the book instead and give yourself a quick ten-minute

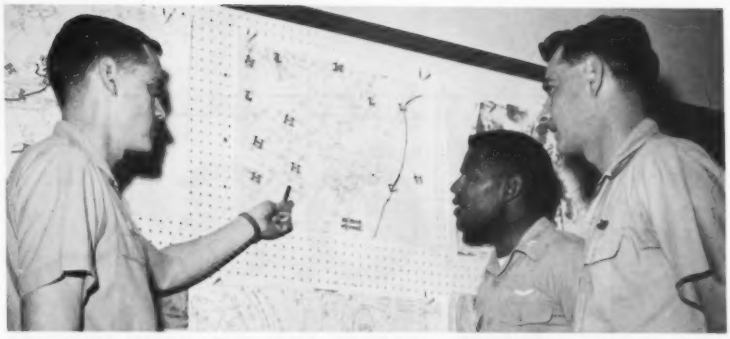
refresher course? Do it on a systematic, programmed basis . . . a system at a time plus one emergency procedure per day. You'll be surprised how much you can learn *and retain* this way — especially if you reinforce each day's lesson with a quick review of the previous day's material.

2. Once or twice a month, take ten minutes out of your lunch hour and work up a TOLD card from scratch, using current weather information and Dash One performance charts.

3. At least once a month, show up ten minutes earlier than usual for a flight and read the new or changed material in the FLIP Planning book. On alternate flights review the FCIF from cover to cover, instead of just hitting the new items.

4. Another valuable ten minutes for safe mission accomplishment is a thorough discussion with the forecaster about the weather. Be sure you know not only the big weather picture, but also the specific existing and forecast weather for your destination, several possible alternates, a departure alternate or two, and a liberal sprinkling of en route bases—just in case. Ask to see the latest ESSA satellite photos; take a peek at the radar scope and ceilometer readings. If the forecaster has time, ask him to explain to you *why* he is predicting the weather the way he is. This can amount to a very brief but valuable shotgun course in "meteorology for pilots."

5. Use delays to your advantage. Instead of just sitting there in the cockpit next time you have to wait on a passenger, maintenance, etc., pick a subject and go over it with your copilot and engineer. If any doubts arise, check them with the Dash One. Discuss the cause and cure of the malfunction with the knuckle-busters. They'll probably appreciate your interest and be happy to educate you on some of the lesser known facts about the mechanical aspects of your bird. This can prove extremely useful in analyzing and writing up similar conditions later.



AN OCCASIONAL TEN EXTRA MINUTES with the forecaster will develop into a metro mini course.

TEN MINUTES OF QUESTIONS AND ANSWERS with your copilot or an IP will help refresh your memory.

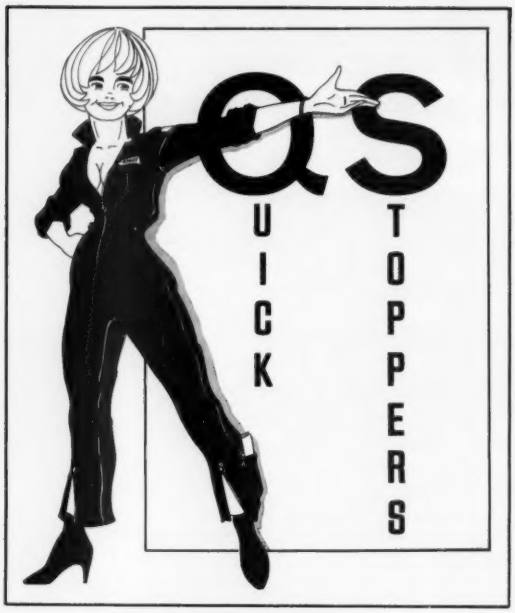
6. Make a deliberate effort to use your flight time to the best advantage. If several landings are planned, make a different type of instrument approach each time, if possible. Don't overlook the conventional VFR traffic pattern and landing during daylight hours.

7. When making approaches and landings, set up precise tolerances for altitude, airspeed, and heading and try to stay within them. You can start slowly and get tighter as your skill increases. This amounts to about ten minutes of intense concentration per leg and should show measurable results in short order. You'll love the feeling of satisfaction that comes with the ability to keep those crosshairs centered all the way to the middle marker!

8. "Hangar flying" is one of the oldest and best methods of keeping up with the ever-changing kaleidoscope of facts and other information concerning your flying duties. Take ten minutes or so every so often, drop in on your flight management section, and strike up a session with the IPs. This is guaranteed to stimulate your desire to learn more.

9. Above all, remember that "time and tide wait for no man." Your time is precious, so use it wisely. Those little ten minute periods you spend here and there can pay huge dividends in terms of your own longevity. That makes it a worthwhile project, doesn't it?

10. Now take a ten minute break — you've earned it.



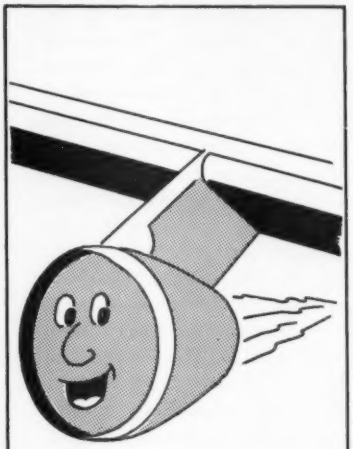
Close to a Cartwheel Caper

When you roll into a thirty-degree bank, how far does your wing tip descend below your aircraft's centerline? Not many of us know this but maybe we should. A recent applicant seeking his type rating in a large civilian, multi-engine jet found out the hard way. Here's how.

The examinee was making a hooded, engine-out ILS. When he reached decision height he went visual, and saw that he was too far left of the runway to land. He quickly banked right to get back to the runway, then made a healthy left bank to align himself. The check pilot took control of the airplane about this time and started a missed approach. As he tried to retract the flaps, the asymmetry light illuminated. After they landed, they found: the number one slat buckled; the left wing tip and underside of the wing damaged; and the tips of the two outboard aft flap jack screw housings scraped. Neither one suspected that the aircraft had contacted the ground until they had the asymmetry problem.

Low decision heights, large aircraft, and high approach speeds make it very difficult to salvage an approach and landing if you are not in the landing slot when you break out. A slightly bent pride is easier to accept than an accident — so go around and try again if you aren't in the slot. Besides, we all need the flying time.

Jet Wake Crosswinds



A Boeing 727 pilot experienced moderate to severe turbulence on takeoff roll and almost lost control of his aircraft. Seems a C-5 was making an engine run on a nearby parking ramp and its exhaust created a mild 10 to 15 knot 90-degree runway crosswind — 1,600 feet away. While an atmospherically generated crosswind of 10 to 15 knots may not pose a problem to most aircraft, a jet wake of the same velocity can be a grave hazard. When an aircraft cuts through a jet wake it is swept from nose to tail by a sharp-edged lateral gust. Any rudder and/or aileron input used to maintain control adds to the gust effect at the vertical stabilizer, and an overcontrol condition develops. The next time you arrive or depart a field where a C-5, B747, L-1011 or DC-10 is operating, use extra caution.

How Do You Tell the Passengers?

While we usually are convinced that we have an option on rotten luck, our civilian counterparts sometimes have bad days too. Like the 707 crew that started engines, ran their checklist, and taxied for takeoff with everything looking good. Then, on takeoff roll, they noticed three of their four engines were unwinding. After they aborted the takeoff, they quickly identified their problem. Seems that on the After Start Engines checklist the item "Fuel Panel — Set" was called, but the appropriate action not completed. They had just attempted a takeoff with all center and main tank boost pumps off and eight low pressure fuel lights staring them in the face.

Sounds like a C. R. Terror feature, doesn't it?

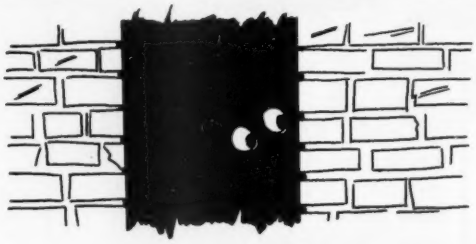
(Flight Safety Foundation)

Hard Water

When the number one ADF antenna loop bit the dust on takeoff roll and the number two loop fell off on landing, someone was asked to dig into the matter. He found that the C-141 had been driven through three-inch puddles of water on takeoff. The water combined with the speed of the heavy aircraft turned the placid puddles into hydraulic hammers, breaking one loop off and loosening the other enough that it separated on landing.

Do you know the Dash One limits for your aircraft for takeoff and landing with water on the runway?

Dark Alley



It was a dark rainy night as the Starlifter blocked out and the crew taxied straight ahead. Across the unlit taxiway, the taxi and landing lights illuminated a forklift parked directly in front of the aircraft. The pilot began an immediate right turn down the parking ramp, and with a ground marshaller's help cleared the forklift. As soon as the pilot cleared the forklift, he began a tight turn to the left to get back on centerline — and to avoid some pallets, cargo, and a fuel tank stored on the right side of the taxiway.

The scanner, copilot, and jump seat pilot were all scanning the right side, and they advised the pilot to pull further left to avoid the obstacles on the right. By now the main gear was about 10 feet from the left edge of the pavement. The aircraft cleared the cargo by approximately 30 feet and was about 10 feet past it when the scanner yelled, "Hold it!" He advised the pilot that he thought they had hit something and he deplaned to see what happened. He had been right — the left wing tip had struck a passenger loading ramp. The ramp was parked so close to the taxiway that, even if the C-141 had been positioned to the far right of the taxiway, it would not have cleared the obstacle.

A taxi maze? You bet! An unlit parking ramp, dark taxiway, and very poor command and control of ground equipment and cargo. This happened at a non-USAF base but even at MAC bases we have problems. Commanders, take note: Clean up your flightline and give our aircraft operators a chance. Pilots: It appears lots of folks forget about you. If you are confronted with a similar obstacle course, shut down and call the base commander. Let him buy the delay!

Line of Disaster

Gee, I didn't know it would do that!

About a year ago we discussed an incident caused by writing on aluminum with a graphite pencil. Remember? — An AMA inspector had drawn a circle around a crack in the aluminum wing skin and two months later the entire disc fell out. Graphite plus aluminum plus water set up a chemical reaction similar to that in a flashlight battery and corroded the entire line. To avoid this, Mr. Cates at SAAMA, McClellan AFB, recommended using a grease pencil to mark on aluminum. Now the General Electric Small Engine Division reports that when marking any *hot section part* of an engine you should use only the following approved materials:

* Chalk
* Dykem Red (Yellow or Black)
* Ink (Justrite Slick-Black; Marco S-1141; Marsh Stencil Ink)
* Soapstone

Additionally, they note that grease pencils or any marking material containing lead, copper, carbon, or zinc, can cause intergranular corrosion or carbon impregnation.

What do *you* use to mark on an aircraft?

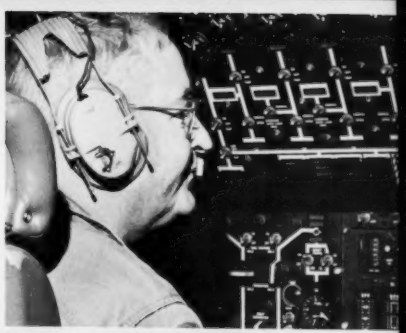
(Talon Service News)

after deadline . . . .

CHOOSING AN EDITOR -- Come Spring, another editor of THE MAC FLYER will be leaving, so we are already on the lookout for prospects. Criteria: MAC aircraft commander, SEA-returnee, captain or major, writing ability, volunteer. Desirable but less necessary: writing experience, safety experience, art experience. If you're interested, write for a free Editorial Ability Evaluation Form. No obligation.

1972 COMBAT AIRLIFT COMPETITION -- The first week in September will be a hectic one for all of you participating in the competition at Travis. We hope to be out there and watch you in action. The best of luck to each of the wings and the reserve forces participating this year. We've got our winner picked. Do you?

NEW PAGE THIS MONTH -- "Global Notes" will be a monthly feature starting with this issue. Its purpose is to put you in the magazine. We'll need your support to make this page interesting and informative. If you or your organization receive any award or citation for flying accomplishment, flight line improvements, aircraft modifications or anything you think you would like to see on that page, send it in. Toot your own horn and let the world know too. If you have photos, send them too. Our address is inside the front cover. Let's make "Global Notes" a smashing success.

THAT'S A NICE PHOTO -- In June we requested different and interesting aircraft and aircraft related pictures from you guys out there in MAC land and guess what? Not one single taker. We will, if you submit them, publish them in the magazine. Hellooooooo out there! We're waiting to hear from you.

COMING ATTRACTIONS -- Headline features for October include some winter weather topics, emergency use of the autopilot, the navigator's role in preventing accidents, a blurb on the junior executive in the right seat, plus a reply to the article on "Married Men are the Safest Crewmembers."